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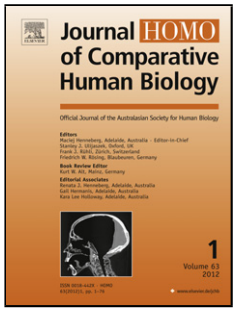

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Collective secondary cremation in a pit grave: a unique funerary context in Portuguese Chalcolithic burial practices

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Abstract

Perdigões is a large site with a set of ditched enclosures located at Reguengos de Monsaraz, Alentejo, South Portugal. Recently at the central area of this site burnt human remains were found in a pit (#16). This structure had inside human remains, animal bones (namely pig, sheep or goat, cattle, dog, deer and rabbit), shards, ivory idols and arrowheads. All have been subjected to fire and later deposited in that pit, resulting in a secondary disposal of human bones. The recovered fragmented human bones (4845.18g) correspond to a minimal number of 9 individuals: 6 adults and 3 sub-adults. The aim of this work is to document and interpret this funerary context based on the study of the recovered human remains. For that purpose, observations of all alterations due to fire, such as colour change and type of bone distortion, as well as anthropological data were collected. The data obtained suggest that these human remains were probably intentionally cremated, carefully collected and finally deposited in this pit. The cremation was conducted on probably complete corpses, some of them still fairly fresh and fleshed, as some bones presented thumbnail fractures. The collective cremation of the pit 16 represents an unprecedented funerary context for Portuguese, and Iberian Peninsula, Chalcolithic burial practices. Moreover, it is an example of the increasing diversity of mortuary practices of Chalcolithic human populations described in present Portuguese territory, as well as, in the Iberian Peninsula.

Resumo

O recinto dos Perdigões, localizado em Reguengos de Monsaraz, no sul de Portugal, tem revelado desde 1997 diversos contextos funerários do Neolítico final e Calcolítico. Na sua área central foi identificado uma fossa (16), contendo restos ósseos humanos, cerâmica e fauna diversa. A respectiva escavação veio revelar tratar-se de um depósito secundário correspondendo ao despejo de restos de ossos humanos cremados, restos faunísticos (porco, ovelha ou cabra, vaca, cão, cervo e coelho) e cerca de meia centena de pontas de seta e fragmentos de ídolos em marfim, material que se apresentava também intensamente queimado.

Neste trabalho serão apresentados os resultados do estudo laboratorial dos restos ósseos humanos. Este revelou que todo o espólio ósseo humano (4845.18 gr) esteve sujeito à acção de fogo, de diversa intensidade. Predominam os vestígios ósseos sujeitos a altas temperaturas (> 900º), revelado pelas alterações registadas em termos de cor, tipo de fracturas e deformações. Este espólio terá pertencido a um mínimo de 9 indivíduos, 3 dos quais faleceram antes de atingir a idade adulta. A fossa 16, um contexto secundário e colectivo de cremação representa um contexto funerário único do Calcolítico Português, bem como de toda a Península Ibérica. Constitui mais um exemplo da crescente diversidade de práticas funerárias descritas para esta região da Europa.

Introduction

In Portugal, until recently, discourse on funerary spaces and mortuary practices were mainly supported by data on megalithic monuments, including dolmens, vaulted chamber tombs (*tholoi*) and hypogea (artificial caves). In these places, the human bones were mainly discovered very fragmented, mixed, and with few or even no anatomical connections (Boaventura, 2009, 2011; Morán and Parreira, 2009; Neves and Silva, 2010; Silva, 1999, 2002, 2003a; Silva and Ferreira, 2008a, 2008b; Silva and Marques, 2010; Tomé, 2011; Valera, 2012a). Recently, evidence for a wider range of mortuary and funerary practices for the Neolithic/Chalcolithic was suggested, by literature review (Silva, 2002; Weiss-Krejci, 2005, 2011) and due to new findings, especially in South Portugal, such as the proliferation of burials in negative structures, discovered in the last decade, as hypogea, pit graves, depositions inside ditches and secondary cremations deposits (Valera, 2012a, 2012b). All these new data suggest a greater diversity of architectures and mortuary practices in the Late Neolithic and Chalcolithic, including different ways of treatment of the human bones (Boaventura et al., 2014; Silva, 2012; Valera, 2012a, 2012b; Valera and Silva, 2011; Weiss-Krejci, 2005, 2011).

Cremations are rarely described in archaeological and anthropological literature: they are avoided due to the complexity related to their study and interpretation. These difficulties are increased when cremated remains are from commingled ossuary context of large number of individuals. However, even these studies on burnt human bones can provide valuable insights into past mortuary practices and biological aspects of past populations. Evidence of burnt bones from the Portuguese Late Neolithic/Chalcolithic funerary contexts has been described since the end of the 19th century (Silva, 2002, 2003a). These findings, recovered from

collective burials of different types (natural caves, rock shelters, dolmens, *tholoi*, stone structures in a walled enclosure) were accompanied by the discussion whether burning was accidental or intentional, and promoted by practical or ritual considerations (Weiss-Krejci, 2005). The major problem with these funerary contexts is that they were excavated many years ago and nowadays there is no or little information about the disposition of the recovered human remains. Thus, interpretations of these funerary contexts are limited. The literature review of the Portuguese Late Neolithic/Chalcolithic burials suggests that, when burnt bones are present, they are usually a small part of the recovered human remains. Moreover, the dominant colour changes are black and brown, that is, they represent charred human bones (exposed to temperatures around 300ºC; Shipman et al., 1984). Therefore, these data are not enough to interpret these contexts, namely to decide if they are accidental or intentional burnings.

Perdigões is a large set of ditched enclosures localised within the municipality Reguengos de Monsaraz (South Portugal), and dated to the Late Neolithic and Chalcolithic (Fig. 1). Ongoing studies have indicated that a variety of mortuary practices existed in this set of enclosures, as primary depositions in pits, depositions in vaulted type monuments (*tholoi*) and ditches and deposits of cremated remains in pits and in an open area (this last one, still under excavation). Moreover, some of these different forms of treating the death occurred at the same time (Valera, 2012a, 2012b; Valera and Silva, 2011).

INSERT Fig. 1 ABOUT HERE

The aim of this paper is to document an unknown funerary context of the Portuguese Chalcolithic burial practices: the collective cremation found in the pit 16 within the Perdigões Enclosure. For that purpose, the cremated human remains are analysed in detail. This approach includes anthropological data and the description of the alterations related to fire contributing to the interpretation of this particular burial context.

Material and methods

Pit 16 is located in the central area of the Perdigões Enclosure. It was open in pre existing deposits from the Chalcolithic occupation of the site, but also cuts the geologic bedrock. It has an inverted conical section shape (Fig. 2), with 1.54 m diameter at the base, 0.93 m diameter at the top and is 1.00m deep. It was filled with eight deposits. The first two are thin sandy

layers at the bottom. Then a conical shape deposit was formed (UEs 72 and 74) resulting from an action of dumping cremated human remains. This deposit includes grey sediments full of ashes, large charcoal fragments, burnt human bones, some burnt animal remains and archaeological material. After that, the side areas of the conical deposit were filled with other deposits (UEs 76 and 90), with some pottery and animal remains, and less evidence of the exposure to fire. The sequence was then completed with the formation of three top deposits (UEs 71, 68 and 58), also with pottery and faunal remains. The archaeological material associated with the human remains was composed of arrowheads, fragments of pottery and ivory idols. The stratigraphic evidence shows that the cremation took place elsewhere and that the remains were deposited there later.

Due to the particular funerary context, an appropriate anthropological protocol was addopted (Duday et al., 2000; Gatto, 2002, 2003, 2007; Lenorzer, 2006). The different types of material (human bone, non-human bone and archaeological artefacts) recovered from this pit were separated. As suggested by Outram et al. (2005) an integrated analysis was attempted due to the complex mixtures of disarticulated and cremated human and some animal bones. Therefore, the separation of human from non-human bones involved physical anthropologists and zooarchaeologist. The excavators also participated in this analysis, allowing the clarification of issues related to the funerary context. In fact, one of the physical anthropologist and the zooarchaeologist took part in the excavation of this pit. This active collaboration was also extended to the analysis of recovered artefacts.

The human remains were cleaned, washed (when necessary) and catalogued prior to data recording. For that purpose human bone fragments were sorted into skeleton´s division by categories of cranial, long bones, hand bones, foot bones and other bones (which included all other bones). Sub-adult bones were separated from adult bones. Doubtful bone fragments were jointly analysed by human and animal bones specialists. If even after that joint analysis there was some doubt about the fragments' identification, those bones were considered as non-identified.

Information recorded for inferences about the temperature that these human bones were submitted to included data related to colour changes (apparently no colour alterations, brown, black, blue, grey and white; Shipman et al., 1984), fracture pattern (Curtin, 2008; Gatto, 2007), level of distortion and apparent degree of shrinkage. These data were also used to state the condition of the bones when cremated: flesh or dry (Gatto, 2002, 2007; Lenorzer, 2006).

Minimal number of individuals (MNI) was estimated according to Herrmann et al. (1990, adapted by Silva, 1993) and Silva (1993, 1996, 2002). These approaches were developed for

commingled and very fragmented human bone assemblages and adapted to cremated human remains.

Palaeobiological data, such as demographic characteristics – ageing (adult versus sub-adults), sexing - and other skeletal data, discrete traits and pathology were tentatively assessed according to standards compiled by Buikstra and Ubelaker (1994), Saunders (1978), Smith (1991) and Silva (1995). Observations were made under strong light and, when necessary, using a 10 power hand lens.

To infer more detail regarding the thoroughness of the retrieval of human bones in this pit, bone representation of adult individuals was checked for possible irregularities using bone weight of the different parts of the skeletons (for more details about this method see Silva et al., 2009). This approach is particularly helpful in samples where the bones are reduced to tiny pieces including a great percentage of fragments without complete identification. In this method, the bones are weighted according to their category and the obtained value converted to percentages. These are compared with the reference values in order to check for deviations (Silva et al., 2009). Few studies have documented skeletal weight from burnt remains (Gonçalves, 2012; Herrmann, 1976; Malinowski and Porawski, 1969; McKinley, 1993). Recently, Gonçalves et al. (2011), recorded weight of two samples (cadavers and skeletons) from modern cremations of Portuguese individuals. However, the proposed reference values are difficult to apply in archaeological cremations, particularly in secondary cremations, since we do not know the sex of the individuals or even the pre-cremation conditions (cadaver or dry bones). It is also possible that the same sample includes individuals in different pre-cremation conditions. Therefore, we have chosen to use the reference values of Silva et al. (2009) since they represent the results of pooled sample of skeletal weight of a Portuguese skeletal sample dated to the 20th century, despite the fact that the values were obtained from unburnt skeletons.

All these data were considered for inferences about the funerary treatment of the human remains studied here.

Results

The cremated human remains – identification and quantification

Pit 16 contained approximately 2500 burnt human bone fragments, including 63 dental remains, weighing a total of 4845.18g (Table 1).

INSERT Table 1 ABOUT HERE

This human bone assemblage is characterized by extreme fragmentation, a high degree of thermal alteration and some level of distortion and/or fracture patterns. The majority of fragments are less than 15/20 mm in size with numerous specimens significantly smaller. Bones from all parts of the skeleton are present, including very small hand and foot bones. Among the former, 3 lunates, 1 pisiform, 1 trapezium, 1 capitate, 8 distal hand and 4 foot distal phalanges were identified. Sometimes bone pieces could only be identified within broad anatomical categories such as a long bone of large diameter (humerus, femur or tibia) or small diameter (radius, ulna or fibula). However, some specific cranial areas (orbits, *pars petrosa*, mandibular condyle) and teeth were completely classified.

All human bones have been exposed to heat. The observed colour changes ranged from brown/black to blue/grey/white, although few fragments did not display any visible colour changes (Fig. 3). The predominant colour change was grey (incompletely oxidised) and white (completely oxidised) for all skeleton categories which suggests that the majority of the remains were submitted to high temperatures (> 600º/800º) for some time. A more detailed analysis of colour changes (Shipman et al., 1984) among the different skeletal categories revealed that it was in the "other bones" category that more variability of colour changes was observed, since a greater proportion of brown and black fragments were present (although always less than grey or white fragmets).

INSERT Fig. 3 ABOUT HERE

Different colours were sometimes observed in the same bone fragment. In cranial fragments, the colour observed on the exocranium corresponds always to higher temperature than the inside: one fragment of left parietal was grey on the outer table and black on the inner one; in two fragments, a frontal bone fragment and a fragment of mandible from the menton, the outer sides were black, and the insides were brown. Different colours were also registered in the outer surfaces of some fragments of long bone diaphyses.

Various patterns of fractures were observed. Curved transverse (thumbnail) (Fig. 4) and longitudinal fractures were viewed in some long bone fragments suggesting that at least some human remains were cremated as fresh bones. Patina or reticular fractures were also visible in some cranial bone fragments. Other thermal alterations, such as distortion, were also registered in long bone fragments.

INSERT Fig. 4 ABOUT HERE

Evidence of red/orange ochre was recorded for 24 bone fragments, 3 belonging to sub-adult individuals. Among the adult sample, 8 fragments were from the cranium and the remaining from long bones. In the 3 sub-adults, 2 were scapular fragments and one from a vertebral body.

The radiocarbon date on two human bones, an axis (Beta 289262: 3990 ± 40 BP, cal 2 sigma 2580 – 2460) and a metacarpal bone (Beta 289264: 3940 ± 40 BP, cal 2 sigma 2560 – 2300) confirmed the Chalcolithic chronology of these human remains (Valera and Silva, 2011).

Demographic, morphological and palaeopathological profile

Demographic data collection was equally problematic due to the highly fragmented bone assemblage recovered from this pit. These remains correspond to a minimum number of 9 individuals, 6 adults (left mandibular condyle) and 3 sub-adults (teeth). The sub-adults include individuals of 6-7 years, 11-12 years and around 14 years age at death, all estimations obtained by tooth development (Smith, 1991). An attempt was made to assign all bone and tooth fragments to broad age categories but in practice it was only possible to distinguish between immature and adult, with few exceptions. Among the adults, the presence of two lumbar vertebrae without fusion of the vertebral epiphyses (Fig. 5) and the epiphyseal line of iliac crest still visible in a fragment of ilium, suggest that at least one young adult (20-25 years) was represented in this assemblage. Evidence of mature adults was also provided by the advanced obliteration of the sagittal suture in a parietal bone fragment.

INSERT Fig. 5 ABOUT HERE

No inferences about sex were possible. Concerning the morphological analysis, two non-metric characters were registered complete supraclavicular perforation in a right clavicle diaphysis (Fig. 6) and the presence of supranasal suture in a small frontal bone fragment.

INSERT Fig. 6 ABOUT HERE

Evidence of diseases was observed in some fragments belonging to adult individuals. These include oral pathology, degenerative, traumatic and infectious diseases.

The dental remains, mainly represented by loose tooth fragments, displayed severe damage. Usually the crown was broken into several pieces and very incomplete, making it impossible to recognize dental pathologies, such as carious lesions or deposits of calculus. Among the few maxilla fragments, antemortem loss of both right premolars was observed in a jaw fragment (Fig. 7). This specimen was send to strontium analyses to infer mobility of this individual. Unfortunately, not enough enamel was preserved to obtain strontium isotopic data.

INSERT Fig. 7 ABOUT HERE

Signs of periostosis (infectious diseases) were observed in 6 fragments of long bones. Degenerative diseases, in form of osteoarthritis were observed in a lumbar vertebra and in a proximal foot phalanx. Finally, a healed cranial fracture was noticed in an adult occipital bone fragment. The lesion, a remodelled circular depressed cranial fracture, was localised near the lambdoid suture, with a diameter of around 10 mm and about 1 mm depth. However, this depression could also represent an incomplete trepanation.

Inferences of the mortuary practices

Total of 4845.18 g of human bones were recovered from this pit. Among them, 339.58 g corresponds to unidentified bone fragments and 69.1g to sub-adult bone fragments. The remaining 4436.50 g are bone fragments of adults. This last value was used in the analysis of bone representation to check for possible irregularities in the different parts of the skeleton. For that, the bone weight values of the five considered categories were converted to percentages and compared to the reference values. The obtained values are shown in Figure 8. As it can be seen, the obtained curve is similar to the expected values with some deviations in the categories of "other bones" and foot bones, being these bones represented less often than expected.

INSERT Fig. 8 ABOUT HERE

Faunal remains

Faunal remains and the human remains from this pit share the intense fire manipulation, suggesting that they where cremated together. Despite their small size, making impossible anatomical or taxonomic determination in many cases, this study, still under way, has already identified some species, such as suids, ovicaprids, cattle, dog, deer and rabbit.

Discussion

The collective secondary cremation burial in the pit 16 from the Perdigões Enclosure represents a distinctive funerary context. The stratigraphic evidence shows that the cremation took place elsewhere and that the remains were thrown into the pit. Besides the human bones, this deposit also contains animal bones (suids, ovicaprids, cattle, dog, deer and rabbit), fragments of pottery, ivory idols and arrowheads, all submitted to fire suggesting that they were exposed to fire together. Evidence of ochre was found only on human remains.

The cremated human bone assemblage recovered includes a minimum of 9 individuals, adults (6) and sub-adults (3). The demographic data seem to indicate that they are not a selected group of individuals, that is, they could represent the dead of a human group. All bones were subjected to fire, although some colour variation was recorded indicating that different elements of the body were exposed to different temperatures for different lengths of time, representing a heterogenous combustion. The identification of fully and partially oxidised human and animal bones suggests the later ones were deliberately included in the cremation. Among the human cremated bone assemblage the dominant colours were grey (incompletely oxidised) and white (> 600º) confirming the exposure to high temperatures for some time. This level of cremation, exceptional for prehistoric contexts, suggests a significant effort to reduce the remains to very small fragments. Still, the secondary nature of this context is probably also responsible for the high level of fragmentation of the human remains: fragile bones tend to break more often due to manipulation and transportation (Lenorzer, 2006).

Fissuring and fractures were present on several elements in this context. The presence of thumbnail fractures is generally associated with the presence of soft tissues when the body was cremated, suggesting that at least some individuals were cremated as fleshed bodies. However, recently Gonçalves (2012) demonstrated that this type of fracture can also appear in burning of dry bones suggesting that this may be related to the preservation of collagen (Gonçalves et al., 2011) instead of pre-cremation state. Unfortunately, no data about the pre-cremation conditions of the human remains are available. Also, we can not exclude that the cremation was performed on individuals in different stages of decomposition.

The 4845.18 g of human bones were recovered from this pit. According to the literature, the weight of archaeological cremations of adult individuals vary from 375 g to around 1200 g (Cullen, 1995; Grévin et al., 1998; McKinley, 1993), although lower values have been documented for prehistoric French sites (see Lenorzer, 2006). These values are lower than for modern cremations, since they are subjected to post-cremation taphonomic disturbance. Thus, if we consider the bone weight of the adult sample 4436.5 g, this corresponds to a mean value of 807.5 g/individual (MNI= 6 individuals), a value that falls within the expected weight range of archaeological human cremations. The presence of bones of all parts of the skeleton, including small hand and foot bones, and the results of bone weight analysis reveal some care in collecting the cremated remains (as well as those of the faunal remains and artefacts). Also, probably complete bodies had been burnt in this case, instead of disarticulated body parts, as it was sometimes suggested for prehistoric deposits of cremated bones, generally incomplete and underweight bone assemblages (Duffy and MacGregor, 2008).

For the bone weight approach, two groups of bones, “other” and foot bones were under-represented. For the former, the nature of the bones with higher content of trabecular bone can be responsible, at least in part, for less bone tissue preserved due to the taphonomic factors. The lower values for foot bones are more difficult to explain, since these are usually well preserved and easily identified, at least in unburnt bones. One possible explanation could be related to a more deficient recovery of this terminal part of the skeleton: foot bones could be less accessible for gathering.

Among the morphological data, the presence of complete supraclavicular perforation was noticed. In clinical literature, this perforation is considered a rare anatomical variant of the clavicle. This canal seems to result from an unusual course of the supraclavicular nerve and is mainly studied due to its potential relation to supraclavicular nerve entrapment (Jelev and Surchev, 2007). This morphological trait is also rarely described in past human populations. According to Saunders (1978) its frequency varies between 1.6% and 6.7%, with a strong genetic determination. In the Portuguese Late Neolithic/Chalcolithic populations this trait is sometimes described (Table 2), with frequencies ranging between 0% and 16.7%. The exact meaning of this higher frequency in some Portuguese prehistoric samples is unknown but it could be an indicator of greater genetic relatedness of these individuals.

INSERT Table 2 ABOUT HERE

The most striking pathology finding was a circular cranial lesion located near the lambdoid suture. Although, this remodelled lesion can be considered a depressed cranial fracture, trepanation cannot be excluded. If the later could be confirmed, this would be relevant, since all confirmed cases of trepanation dated from the Late Neolithic through the Bronze Age, were recovered from coastal samples in the present Portuguese territory. Scraping was the predominant method of trepanation used in the previously described cases by Silva (2003b). The present case, if confirmed, is more compatible with drilling technique, less frequent and apparently only described for earlier findings (Middle Neolithic).

Concerning the faunal remains, pit 16 includes a more diversified set of species, including dog, scarce in other funerary contexts, and a wider range of anatomical parts, spanning from cranial to limbs, including vertebrae.

It is unclear why and where these individuals were cremated. However, there seems to be no doubt that they were intentionally cremated, carefully collected and finally deposited in this pit. This is suggested by several lines of evidence: the level of cremation of bones, the recovery of apparently all skeletal elements, the presence of red ochre, burnt fauna and artefacts. Moreover, the importance of fire in mortuary practices at the Perdigões Enclosure is becoming more evident due to the discovery of other contexts with human thermally altered bones. Examples of this are the presence of charred bones in sepulchre 1, and bones with different thermal alterations exhumed from an open area and another pit in the centre of this enclosure, still under excavation. These data suggest an increase of the importance of fire during the Chalcolithic period in this enclosure, if we consider the level of cremations and the proportion of burnt versus non-burnt human bones.

Ethnographic sources reveal several reasons for cremating human corpses, such as to control the spread of disease or to make it easier to transport the remains, for example when death occurred far from home. In the Portuguese archaeological record several Late Neolithic/Chalcolithic funerary spaces were interpreted to have been emptied of human bones for new depositions but without evidence of the use of fire. In another case, at Olival da Pega 2b, located a few kilometres from Perdigões, a mass of *in loco* cremated human bones was found inside the tomb; the bones were covered by thin slabs (evidence of local fire) for the subsequent funerary use – this was interpreted as a form of "sanitizing" the space, although the burnt bones were not removed from the tomb (Gonçalves, 1999, 2003). The funerary context of pit 16 seems to be different from the above mentioned cases. Although it could be argued that in some situations, such as the present one, the human bones were removed and brought to Perdigões for final disposal, though, the pit 16 funerary context clearly shows the

secondary deposit of the cremation which was done elsewhere. This cremation could occur in Perdigões or outside the enclosure, resulting in a process of transportation to this site for final interment.

A survey of the literature on cremated remains in collective Late Neolithic and Chalcolithic funerary contexts from other parts of the Iberian Peninsula and France revealed that this practice is not so unusual (Gatto, 2002, 2003, 2007; Lenorzer, 2006). In fact, the information exists but is dispersed in local and less accessible journals. Also, reports usually do not include exhaustive analysis of human cremated remains.

Human bones with signs of exposure to fire are documented in several caves from the northwest of Catalonia (Agustí I Farjas, 2002), southwest of Spain (Sáez et al., 2002; Sanchez, 1984) and several regions of France - such as in the North-central region of Loiret (Chambon, 2003), and the southwest (Agustí I Farjas, 2002; Chambon, 2003; Gatto 2002; 2003; Lenorzer, 2006). In most cases human remains were cremated *in loco* (primary deposits) with different levels of exposure to fire, with fragments of bones that are only charred or blackened, and others looking white and calcined. Secondary deposits of burnt remains recovered from the southeast of France were also described by Gatto (2002, 2003). In these sites, the collection of calcined or carbonised bones were more or less thorough. Moreover, at the French site of Le Rond du Lévrier, cremated remains were found between layers of non burnt bones (Gatto, 2002).

Evidence of collective secondary cremations is less frequent but has been documented for Spain and France. In Cueva de la Mostela, located near Barcelona, the presence of cremated human bones without the presence of ashes were interpreted as cremations outside the cave followed by a selective recovery of the human remains that were deposited inside the cave. Similar contexts were described for other Spanish caves such as Cueva de Can Sadurní and Cueva de la Guia (Agustí I Farjas, 2002: 66). The Dolmen II of San Sébastien (Var) is an example from the southwest of France (Chambon, 2003; Gatto, 2007). This secondary context included a minimum number of 78 individuals. Moreover, a differential representation of different parts of the skeleton was noted in favour of skull parts (Chambon, 2003).

These examples, far from representing a complete list of sites with cremated bones dated to the Late Neolithic and Chalcolithic, show that human burnt remains are found in several types of tombs, such as dolmens, *tholoi*, natural caves and rock cut tombs. Even so, the pit 16 seems unique as it represents the only case of collective and secondary cremated bones recovered from a pit grave.

In the last decade, evidence for a more diversified mortuary and funerary practices for the Portuguese Neolithic/Chalcolithic sites has emerged, particularly with new findings from South Portugal. Among them, the collective cremation burial pit 16 from the Perdigões Enclosure is a unique funerary context among the Portuguese Chalcolithic burial practices. It represents the end result of a multifaceted burial ritual that included, at least, the cremation of apparently complete bodies with ochre, fauna and artefacts, careful collection of all these remains, their transport and dumping into a pit. Demographic data of the bone assemblage in the pit 16, which includes adults and sub-adults, seem to represents a random, non-selected group of individuals. Still, it is unclear why and where these individuals were cremated and finally deposited in this pit. The analysis of mortuary practices of the different burial structures at the Perdigões Enclosure is still in course. Conclusion of all the ongoing work at this enclosure which includes the anthropological analysis of human bones, the study of fauna and all the recovered archaeological artefacts will contribute to the knowledge of the human population whose last place of deposition was the Perdigões Enclosure, located in the southwest of the Iberian Peninsula.

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Table 1. Weight of the considered skeletal parts from the human remains recovered from pit 16 of Perdigões Enclosure (Portugal).

Anatomical area	**Weight (g)**
Cranial bones (including mandible and teeth)	1264.95
Long bones	2296.82
"Other" bones	802.98
Hand bones	45.46
Foot bones	26.29
Sub-adult bones	69.10
Unidentified bone fragments	339.58
TOTAL	4845.18

Table 2. Frequency of the presence of supraclavicular nerve in human remains exhumed from the Portuguese Late Neolithic/Chalcolithic collective tombs. Results are presented by side since the human remains were recovered almost exclusively without any anatomical connection.

Site	Left	Right	TOTAL
Dolmen de Ansião	0/3=0%	0/2=0%	0/5=0%
Serra da Roupa (rock shelter)	0/4=0%	0/6=0%	0/10=0%
Tholos de Paimogo I	2/46=4.3%	4/58=6.9%	6/104=5.8%
Alqueves (natural cave)	2/12=16.7%	2/14=14.3%	4/26=15.4%
Eira Pedrinha (natural cave)	2/24=8.3%	0/23=0%	2/47=4.3%
Cova da Moura (natural cave)	0/3=0%	1/3=33.3%	1/6=16.7%
Tholos de Cabeço da Arruda II	0/2=0%	0/4=0%	0/6=0%
Hipogeu de São Paulo I (artificial cave)	1/24=4,2%	0/30=0%	1/54=1.9%
Poço Velho (natural cave)	1/26=3.8%	0/26=0%	1/52=1.9%
Tholos Praia da Maça*	1/4=25%	0/2=0%	1/6=16.7%
Praia da Samarra*	0/11=0%	0/13=0%	0/24=0%
Hipogeu de Monte Canelas I (artificial cave)	3/29=10.3%	3/25=12%	6/54=11.1%

* Study of the part of the collection.

Fig. 1. Map of the Iberian Peninsula showing the location of Perdigões Enclosure in south Portugal.

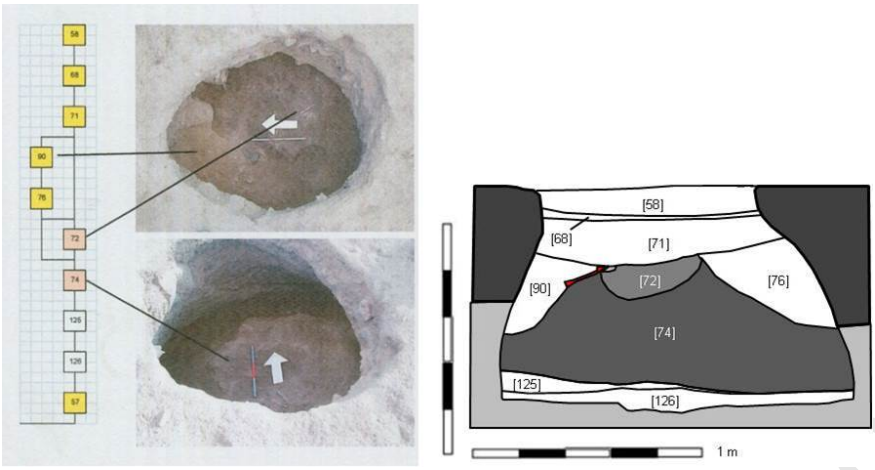

Fig. 2. Pit 16 of Perdigões ditched enclosure with the conical deposit of human cremated remains (Harris matrix; superior view of the deposit with the cremation inside the pit and section of Pit 16).

Fig. 3. Human bone fragments recovered from pit 16 (showing size and colour variability) from Perdigões Enclosure.

Fig. 4. Thumbnail fracture on a long bone fragment from pit 16 from Perdigões Enclosure.

Fig. 5. Lumbar vertebrae without fusion of the vertebral epiphysis preserved from pit 16 from Perdigões Enclosure.

Fig. 6. Complete supraclavicular perforation of a right clavicle recovered from pit 16 from Perdigões Enclosure.

Fig. 7. A right side fragment of a mandible from pit 16 from Perdigões Enclosure. Note that both premolars were lost *antemortem*.

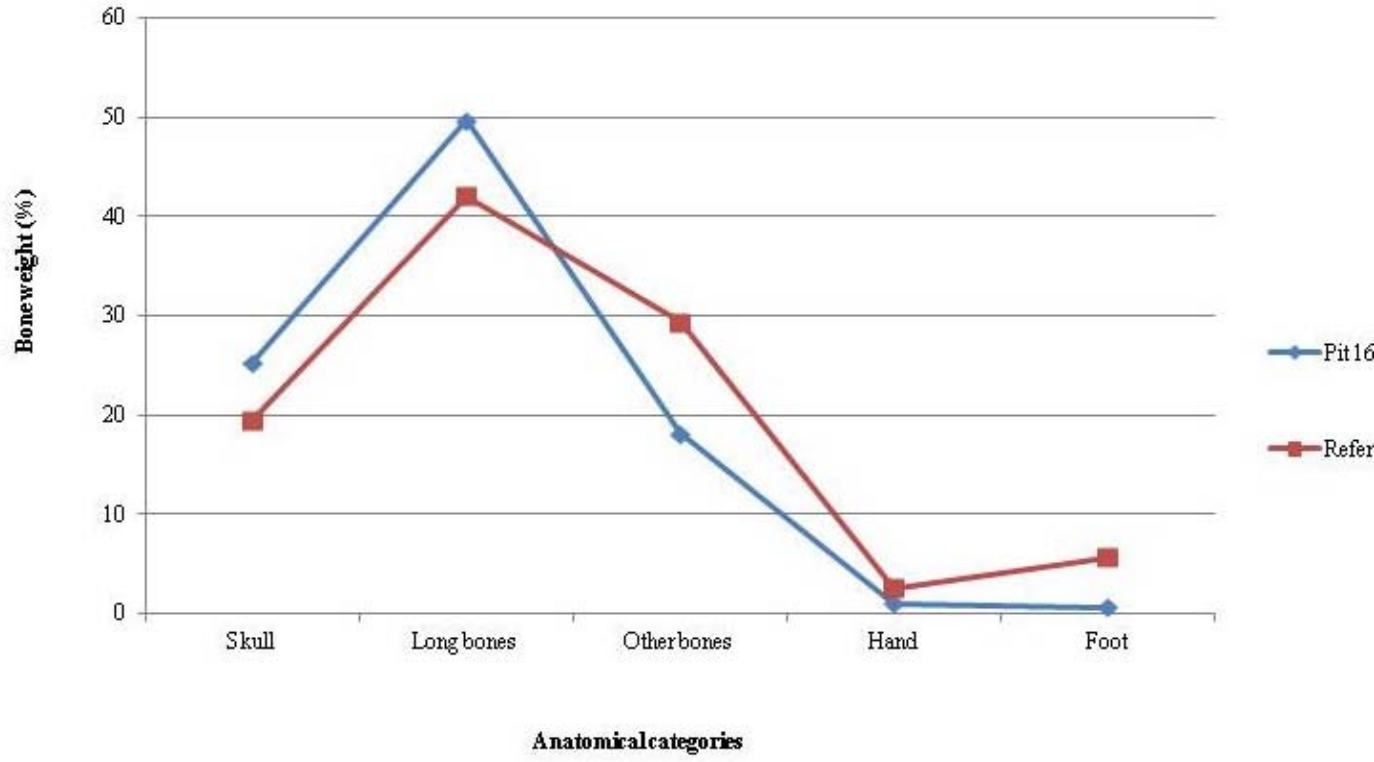

Fig. 8. Comparison of the weight percentage of bone fragments recovered from pi**t** 16 with the reference values (Silva et al., 2009).